Algorithms

Quiz#4

Name:

(1) Consider the problem of sorting, in worst-case linear time, an array A of 10,000 9-digit social security numbers in increasing order. For each of the sorting algorithms below, indicate whether or not the algorithm will achieve worst-case, linear-time performance, and briefly explain why or why not. (5 points)

a. Counting Sort

b. Radix sort

c. Bucket sort

d. Merge sort

(2) Consider a hash table of size m = 12 that uses collision-resolution by open addressing and the quadratic probing hash function $h(k, i) = ((k \bmod m) + i + i^2) \bmod m$. Show the hash table resulting from inserting the keys 10, 22, 34 and 16, in this order.(5 points)